WHAT IS CLAIMED IS:

1   1.   A method comprising:

2   performing a set of operations on a first data store, wherein

3   each operation of the set of operations on the first data store performs at least one of

4   producing modified data from data in the first data store, and

5   changing a configuration of the first data store, and

6   the performing the set of operations occurs during copying of selected data in the first

7   data store to a second data store; and

8   causing the set of operations to be performed on the second data store, wherein

9   if the set of operations produces the modified data and a portion of the modified data

10   is not included in the selected data copied to the second data store,

11   the second data store comprises a copy of the portion of the modified data

12   after the set of operations is performed on the second data store.

1   2.   The method of claim 1 wherein

2   one operation of the set of operations restores a portion of first data in the first data store from

3   third data in a third data store; and

4   the causing the set of operations to be performed on the second data store comprises

5   causing a corresponding portion of second data in the second data store to be restored

6   from fourth data in a fourth data store, wherein

7   the portion of the first data and the portion of the second data are the same

8   after the restoring the portion of the first data and after the causing the

9   corresponding portion of the second data to be restored.

1   3.   The method of claim 1 wherein

2   one operation of the set of operations synchronizes first data in the first data store with third

3   data in a third data store; and

4   the causing the set of operations to be performed on the second data store comprises

5   causing second data in the second data store to be synchronized with fourth data in a

6   fourth data store corresponding to the third data store, wherein

7   the first data and the second data are the same after the synchronizing the first

8   data and after the causing the second data to be synchronized.

1   4.   The method of claim 1 wherein

2 one operation of the set of operations changes the configuration of the first data store by

3   creating a first snapshot data store related to the first data store wherein

4   a first snapshot of first data in the first data store is stored in the first snapshot

5   data store; and

6 the causing the set of operations to be performed on the second data store comprises

7   causing a second snapshot data store related to the second data store to be created,

8   wherein

9   a second snapshot of second data in the second data store is stored in the

10   second snapshot data store, and

11   the first snapshot and the second snapshot comprise data that are the same.

1   5.   The method of claim 4 further comprising:

2 establishing a replication relationship between the first snapshot data store and the second

3   snapshot data store after the second snapshot data store is created, wherein

4   the replication relationship causes subsequently modified data in the first snapshot

5   data store to be included in selected snapshot data copied to the second

6   snapshot data store.

1   6.   The method of claim 5 wherein

2 the subsequently modified data are copied to the second snapshot data store when the selected

3   data are copied to the second data store.

1   7.   The method of claim 1 wherein

2 if at a first point in time during the performing the set of operations,

3   a first operation of the set of operations is performed on the first data store, and

4   the first data store comprises first data when the first operation is performed on the

5   first data store; then

6   at a second point in time,

7   when the first operation is performed on the second data store,

8   the second data store comprises a copy of the first data.

1   8.   The method of claim 1 wherein

2 if at a first point in time during the performing the set of operations,

3   the first data store comprises first data, then

4   at a second point in time,

5   when the second data store represents the first data store at the first point in time,

6   the second data store comprises a copy of the first data.

1   9.   The method of claim 1 wherein

2   the set of operations comprises:

3   an ordered subset of the set of operations, wherein

4   operations in the ordered subset of operations are performed on both the first data

5   store and the second data store in a sequential order.

1   10.   The method of claim 1 wherein

2   producing the modified data occurs at a specified point in the sequential order on the first

3   data store,

4   the specified point is between a first respective point in the sequential order and a second

5   respective point in the sequential order,

6   the first respective point and the second respective point are adjacent in the sequential order,

7   and

8   the causing the set of operations to be performed on the second data store comprises

9   causing the producing the copy of the modified data to occur at the specified point in

10   the sequential order on the second data store.

1   11.   The method of claim 10 wherein

2   the causing the producing the copy of the modified data to occur at the specified point

3   comprises

4   inserting a command in the selected data copied from the first data store to the second

5   data store to produce the copy of the modified data at the specified point.

1   12.   The method of claim 1 wherein

2   the subset of ordered operations comprises

3   all operations in the set of operations.

1   13.   The method of claim 1 wherein

2   the set of operations further comprises:

3   an unordered subset of the set of operations, wherein

4   the unordered subset is performed at a specified point in the sequential order,

5   the specified point in the sequential order is between a first respective point in

6   the sequential order and a second respective point in the sequential

7   order,

8   the first respective point is adjacent in the sequential order to the second

9   respective point, and

10   each operation in the unordered subset can be performed concurrently with

11   respect to other operations in the unordered subset.

1   14.   The method of claim 1 wherein

2   the causing the set of operations to be performed on the second data store comprises

3   causing at least one command that performs the set of operations to be executed on

4   the second data store.

1   15.   The method of claim 1 wherein

2   the selected data comprises first data modified as a result of a write operation.

1   16.   The method of claim 15 wherein

2   the set of operations does not include the write operation.

1   17.   The method of claim 1 wherein

2   the selected data further comprise a portion of a snapshot of first data stored in the first data

3   store, and

4   the portion of the snapshot is modified as a result of a second write operation.

1   18.   The method of claim 17 wherein

2   the set of operations does not include the second write operation.

1   19.   The method of claim 1 wherein

2   the second data store further comprises a copy of the selected data after copying the selected

3   data to the second data store.

1   20.   The method of claim 1 further comprising:

2   upon failure of a primary node associated with the first data storage,

3   identifying a portion of the selected data in the first data store, wherein

4   the portion has not been copied to the second data store, and

5   causing only the portion to be copied to the second data store such that the first data

6   and the second data are the same.

1   21.   The method of claim 1 further comprising:

2   identifying second modified data in the first data storage, wherein

3   the second modified data were produced before the set of operations was performed

4   on the first data storage and after the set of operations was performed on the

5   second data storage, and

6   the second modified data are not included in the selected data copied to the second

7   data store; and

8   causing only the second modified data to be copied to the second data store such that the

9   second data and the first data are the same.

1   22.   A system comprising:

2   performing means for performing a set of operations on a first data store, wherein

3   each operation of the set of operations on the first data store performs at least one of

4   producing modified data from first data in the first data store, and

5   changing a configuration of the first data store, and

6   the performing the set of operations occurs during copying of selected data in the first

7   data store to a second data store; and

8   causing means for causing the set of operations to be performed on the second data store,

9   wherein

10   if the set of operations produces the modified data and a portion of the modified data

11   is not included in the selected data copied to the second data store,

12   second data in the second data store includes a copy of the portion of the

13   modified data after the set of operations is performed on the second

14   data store.

1   23.   The system of claim 22 wherein

2   the set of operations comprises:

3   an ordered subset of the set of operations, wherein

4   operations in the ordered subset of operations are performed on both the first data

5   store and the second data store in a sequential order.

1   24.   The system of claim 23 further comprising:

2   second causing means for causing the producing the copy of the modified data to occur at a

3   specified point in the sequential order on the second data store, wherein

4   producing the modified data occurs at the specified point in the sequential order on

5   the first data store,

6   the specified point is between a first respective point in the sequential order and a

7   second respective point in the sequential order,

8   the first respective point and the second respective point are adjacent in the sequential

9   order.

1   25.   The system of claim 24 further comprising:

2   inserting means for inserting a command in the selected data copied from the first data store

3   to the second data store to produce the copy of the modified data at the specified

4   point.

1   26.   The system of claim 23 wherein

2   the set of operations further comprises:

3   an unordered subset of the set of operations, wherein

4   the unordered subset is performed at a specified point in the sequential order,

5   the specified point in the sequential order is between a first respective point in

6   the sequential order and a second respective point in the sequential

7   order,

8   the first respective point is adjacent in the sequential order to the second

9   respective point, and

10   each operation in the unordered subset can be performed concurrently with

11   respect to other operations in the unordered subset.

1   27.   A computer-readable medium comprising:

2   performing instructions configured to perform a set of operations on a first data store,

3   wherein

4   each operation of the set of operations on the first data store performs at least one of

5   producing modified data from first data in the first data store, and

6   changing a configuration of the first data store, and

7   performing the set of operations occurs during copying of selected data in the first

8   data store to a second data store; and

9   causing instructions configured to cause the set of operations to be performed on the second

10   data store, wherein

11   if the set of operations produces the modified data and a portion of the modified data

12   is not included in the selected data copied to the second data store,

13   second data in the second data store includes a copy of the portion of the

14   modified data after the set of operations is performed on the second

15   data store.

1   28.   The computer-readable medium of claim 27 wherein

2   the set of operations comprises:

3   an ordered subset of the set of operations, wherein

4   operations in the ordered subset of operations are performed on both the first data

5   store and the second data store in a sequential order.

1   29.   The computer-readable medium of claim 28 further comprising:

2   second causing instructions configured to cause using the producing the copy of the modified

3   data to occur at a specified point in the sequential order on the second data store,

4   wherein

5   producing the modified data occurs at the specified point in the sequential order on

6   the first data store,

7   the specified point is between a first respective point in the sequential order and a

8   second respective point in the sequential order,

9   the first respective point and the second respective point are adjacent in the sequential

10   order.

1   30.   The computer-readable medium of claim 29 further comprising:

2   inserting instructions configured to insert a command in the selected data copied from the

3   first data store to the second data store to produce the copy of the modified data at the

4   specified point.

1   31.   The computer-readable medium of claim 28 wherein

2   the set of operations further comprises:

3   an unordered subset of the set of operations, wherein

4   the unordered subset is performed at a specified point in the sequential order,

5   the specified point in the sequential order is between a first respective point in

6   the sequential order and a second respective point in the sequential

7   order,

8   the first respective point is adjacent in the sequential order to the second

9   respective point, and

10   each operation in the unordered subset can be performed concurrently with

11   respect to other operations in the unordered subset.

1   32.   A computer system comprising:

2   a processor for executing instructions; and

3   the computer-readable medium of claim 28, wherein

4   the computer-readable medium is coupled to the processor.

1   33.   A method comprising:

2   performing a set of operations on a first data store, wherein

3   each operation of the set of operations on the first data store performs at least one of

4   producing modified data from data in the first data store, and

5   changing a configuration of the first data store, and

6   the performing the set of operations occurs during copying of selected data in the first

7   data store to a second data store; and

8   causing the set of operations to be performed on the second data store, wherein

9   first data in the first data store and second data in the second data store are

10   consistent during the performing the set of operations on the first data

11   store and during the causing the set of operations to be performed on

12   the second data store.